CLAIMS

1. A method for scheduling a fuel split for a gas turbine combustor comprising:

a. determining a target exhaust temperature corresponding to a desired nitrogen oxide (NOx) at a reference fuel split;

b. determining an exhaust temperature error based on a comparison between a scheduled exhaust temperature and the target exhaust temperature;

c. converting the exhaust temperature error to a projected NOx leveling fuel split adjustment;

d. adjusting the reference fuel split using the projected NOx leveling fuel split adjustment, and

e. applying the adjusted fuel split to determine fuel flow to the combustor.

2. A method as in claim 1 wherein the target exhaust temperature is determined based on at least one parameter of a group of parameters consisting of specific humidity, compressor inlet pressure loss and turbine exhaust back pressure.

3. A method as in claim 1 wherein the fuel split level is a plurality of fuel split levels each indicating a portion of fuel flow to one of a plurality of zones of fuel nozzles in the combustor.

4. A method as in claim 1 wherein steps (b) through (d) are performed in connection with a nitrogen oxide (NOx) leveling algorithm.

5. A method as in claim 1 wherein the conversion of the exhaust temperature error to the projected NOx leveling adjustment further comprises: determining a projected NOx level from the exhaust temperature error;

determining an adjusted Q factor as a ratio of a NOx level baseline request and the projected NOx level, and applying the adjusted Q factor to determine the projected NOx level adjustment.

6. A method as in claim 5 further comprising determining the adjusted NOx level from the exhaust temperature error.

7. A method as in claim 6 wherein the determination of the adjusted NOx level from the exhaust temperature error further comprises correcting the exhaust temperature error account for a condition of a compressor in the gas turbine, and applying the corrected exhaust temperature error to an empirically derived curve relating corrected exhaust temperature error to the adjusted NOx level.

8. A method as in claim 7 wherein the condition of the compressor is a temperate of compressed air discharged from the compressor.

9. A method as in claim 1 wherein the comparison used to determine the exhaust temperature error is a difference between a scheduled exhaust temperature and the target exhaust temperature, and said difference is the exhaust temperature error.

10. A method for adjusting a base fuel split schedule for a gas turbine combustor comprising:

a. determining a corrected target turbine exhaust temperature based on a compressor pressure condition;

b. determining a first corrected temperature adjustment to the corrected target exhaust temperature based on at least one parameter of a group of parameters consisting of compressor inlet pressure loss and turbine exhaust back pressure;

c. determining a second corrected temperature adjustment to the corrected target exhaust temperature based on a nitrogen oxide (NOx) limiting requirement and the base fuel split command;

d. determining an adjusted corrected target exhaust temperature based on the first corrected temperature adjustment and the second corrected temperature adjustment;

e. determining an uncorrected adjusted target exhaust temperature based on a temperature of a discharge of a compressor of the gas turbine and the adjusted corrected target exhaust temperature;

f. determining a temperature difference between the uncorrected adjusted corrected target exhaust temperature and an uncorrected target exhaust temperature selected from a combustor temperature leveling algorithm, and

g. applying the temperature difference to generate an adjusted fuel split schedule.

11. A method as in claim 10 wherein the uncorrected adjusted target exhaust temperature is further based on an uncorrected temperature adjustment determined from ambient specific humidity.

12. A method as in claim 10 wherein the difference between the uncorrected adjusted corrected target exhaust temperature and an uncorrected target exhaust temperature is limited to a positive value.

13. A method as in claim 10 wherein the adjusted fuel split schedule further comprises an adjusted first fuel split indicating a portion of fuel flow to a primary fuel nozzle in the combustor and an adjusted second fuel spit indicating a portion of the fuel flow to be mixed with secondary air entering the combustor.

14. A method as in claim 10 wherein the base fuel split schedule is determined for a base load condition at which the gas turbine is operating at full rated power.

15. A method as in claim 10 wherein steps (b) through (g) are performed in connection with a nitrogen oxide (NOx) leveling algorithm.

16. A method as in claim 10 wherein the application of the difference further comprises: deriving an adjusted projected NOx level from the temperature difference; generating a Q factor as a ratio of a NOx emission baseline and the adjusted projected NOx level; applying the Q factor to the base fuel split schedule to generate the adjusted fuel split schedule.

17. A method as in claim 16 further comprising determining the adjusted NOx level from a corrected value of the temperature difference.

18. A method for scheduling a fuel split for a combustor of a gas turbine comprising:

a. determining a target exhaust temperature corresponding to a desired NOx emission level from the gas turbine at a reference fuel split schedule, wherein the target exhaust temperature is based on at least one parameter of a group of parameters consisting of specific humidity, compressor inlet pressure loss and turbine exhaust back pressure;

b. determining an exhaust temperature error based on a temperature difference between a scheduled exhaust temperature and the target exhaust temperature;

c. converting the exhaust temperature error to a projected NOx level error at the reference fuel schedule, and

d. converting the projected NOx level error to an adjustment to the reference fuel schedule.

19. A method as in claim 18 wherein the adjusted reference fuel split schedule further comprises an adjusted first fuel split indicating a portion of fuel flow to a primary fuel nozzle in the combustor and an adjusted second fuel spit indicating a portion of the fuel flow to be mixed with secondary air entering the combustor.

20. A method as in claim 18 wherein the reference fuel split schedule is determined for a base load condition at which the gas turbine is operating at full rated power.

21. A method as in claim 18 wherein steps (b) through (d) are performed in connection with a nitrogen oxide (NOx) leveling algorithm.

22. A method as in claim 18 wherein the conversion of the temperature difference further comprises: deriving an adjusted Q factor as a ratio of a NOx base request and an adjusted NOx level derived from the temperature difference; applying the adjusted Q factor to the reference fuel split schedule to generate the adjustment to the reference fuel schedule.